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[redacted] report on the uranium industry in Bulgaria. 25X1
The report contains the following information:

a. historical notes from the discovery of uranium in Bulgaria in 1948 to 1957,

b. organization of the Bukhovo uranium mines,

c. ore extraction methods,

d. sorting of ore,

e. productive capacity of the mines, and

f. administrative cadres and workers of the Bukhovo complex.

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BULGARIAN URANIUM INDUSTRY

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Historical Notes

The existence of uranium ore in Bulgaria was ascertained in 1948, when a joint Soviet-Bulgarian team, headed by Soviet geology professor Nikolai Zamorenko, conducted studies and exploration near Bukhovo-Sofiysko. Later uranium ore deposits were discovered in the outcropping terrain in the Svetovrachene, Kremirovchi, Kremirovskaya Monstir, Bukhovo, Zheravino, Seslavchi, and Gara Yana areas. These areas are comprised within the eastern portion of Sofia's Stara Planina and in the southern portion of Botevgradskaya Balkan and Murgash, Planina; they come to a total area of about 480 square kilometers. Lower-grade uranium ore was found in other parts of Stara Planina.

Experimental exploitation of these deposits began in fall 1948; rational exploitation began in spring 1949. Toward the end of 1949, 700 military

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and 400 civilian workers were sent to work in the two existing mines. At present the "Bukhovo" mines employ 3,800 military workers, 1,200 civilian workers, and 120 specialists. During the year [1957], the number of military workers increased by 1,000 (a labor battalion was sent to "force" production and was billeted in the schools of the localities near the deposits).

Until 1955, the "Bukhovo" uranium mines were the property of the Bulgarian-Soviet state mining company ("Gorubso"); after 1955, the Soviets formally renounced their rights in favor of the Bulgarians, but they continue to be de facto owners, since they have the output at their disposal on the basis of a 15-year agreement.

During the 8-year existence of the "Bukhovo" mines, the following directors general have succeeded each other there: Aleksandr Trofimov, Russian; Arman Solanokidze, Georgain; and the present director general, Bulgarian geological engineer Nikolai Yanov, who completed his advanced studies in the USSR, in 1952, at government expense.

The "Bukhovo" uranium complex comprises the following mines: Borkha (director, Russian engineer Prigvozhen); Gorten (director, Bulgarian engineer Ilyev); Seslavchi (Russian engineer Apatov); Seslavski Monastir (Petrov, Bulgarian, Soviet citizen); Prvi May (Russian engineer Omamantov); Prvi May-Iztok, Kremikovchi (Bulgarian engineer Marinov); and Kremirovski Monastir (director, Bulgarian engineer Pavel Ivanov).

A modernly equipped geological laboratory was built 500 meters northwest of Bukhovo; about 120 geologists, engineers and technicians work there under the leadership of geological engineer Stefan Petrov, who completed his advanced studies in the USSR.

Foreign enterprises have also been engaged, but they do not participate directly in production operations, in which over 2,500 managerial, administrative, and blue-collar employees are involved.

Organization of the "Bukhovo" Mines

Each area in which uranium ore is extracted is enclosed by a series of three barbed-wire fences and illuminated at night by powerful searchlights. The security of each mine is entrusted to a battalion of the "internal security army," which is assisted by so-called "mine police." The security force consists of 600 officers, noncommissioned officers, and troops of the "internal security army," 500 "mine militiamen," 300 civilian guards, and 100 firemen. There is also a number of Soviet "specialists." The security service is under the command of "internal security" Lieutenant Colonel Venchislav Parlapanov, who is a former partisan and a native of Varna.

It is forbidden to go any closer than 300 meters from the mining sites, i.e., to go beyond the barbed-wire enclosures. The mine employees are equipped with a special pass, issued to them by the Ministry of Interior. Those who are not employed at the mines and wish to visit them (newspapermen, party officials, labor union officials, etc.) must apply at the Special Service of the Ministry of Heavy Industry in Sofia (Lenin Square), where they are given a letter specifying their business at the mines and on the basis of which the security service of the mine concerned issues an entry authorization to the requester. Visitors are accompanied by security personnel during their entire stay at the mines. No one is authorized to enter the mine tunnels. Unauthorized persons caught in "restricted areas" are sentenced to prison terms ranging from one to 3 years. The security service of the uranium deposits is especially strengthened at night. Illuminated notices state that the sentries will fire without warning. An antiaircraft artillery unit is stationed near the uranium ore washing installation, located near Bukhovo.

Ore Extraction

The ore extraction method used varies from mine to mine, depending on the sloping of the ore layers and of the terrain in which they are located. The mines are not as yet sufficiently equipped to give maximum yield. The ore is generally extracted in the tunnels, which in the future are to be used for transportation purposes, but in order to obtain a greater output from the tunnels, in which considerable quantities of uranium have been found, the mines have switched to the "broad-front excavation" method; the empty spaces thus created will be filled with waste materials. The uranium ore is more generally found in thick layers, mixed with layers of earth of six different chemical compositions; the layers range in slope from 5 to 80 degrees, and this makes extractive operations very difficult. In the lower uranium layers there were dug horizontal tunnels, connected by means of vertical shafts to the higher uranium layers. In each mine, except the "Gorten" mine whose layers slope considerably and where extraction is carried out from the bottom layer up, the uranium ore is extracted from the top layer down, sent through the vertical shafts to the lower tunnels, and thence transported out of the mine. Scarcely 40 percent of the employees are directly engaged in production; the remainder are engaged in expansion of the mines. It is planned to unify all the mines underground, so as to merge them into a single one and thus simplify their management and the transportation of the ore extracted. Where miners are used to extract the ore, it is extracted wholly by the "frontal excavation" method and transported out of the mine by means of conveyor belts or, where the slpe of the layers allows it, by means of simple sheet-metal, conveyors shaped like eaves. Where the ore is found in outcroppings, extraction is carried out by means of excavators or other suitable machines (Seslavki Monastir and Prvi May-Iztok mines). The strip mines have been expanded through the removal of large amounts of nonuranium-bearing earth.

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Until 1949, ore extraction in the Bukhovo mines was carried out with primitive equipment, but after that year the mines were equipped with technical equipment supplied by the Soviet Union, Czechoslovakia, and East Germany. Compressed-air hammers and drills have been provided, and extraction has been made easier also through the use of explosives.

The ore extracted in the various mines varies in appearance; the ore at the "Gorten" mine has the appearance of a greenish stony substance, while the ore at the "Seslavki Monastir" mine resembles hard earth, is earthy in color, and has an orange-colored fluorescence.

Sorting of Ore

A geological specialist sorts the ore, when it is still underground, into three parts, each of which is then removed separately. Each mine has a reinforced-concrete bunker where sorting is carried out, equipped with sifting machines, conveyor belts which transport the ore to be sifted by hand, and an automatic device for loading the ore onto trucks. Each bunker has a capacity of 150 tons. A large part of the ore extracted is discarded; the discarded ore is used as fill dirt in the area around the mines. Ore containing a high percentage of uranium is placed in 50-kilogram crates, on which the words "for testing" are inscribed in Russian, and sent by truck to the airport, from whence it is shipped to the Soviet Union. Top-grade ore, sifted by hand, is placed in 50-kilogram crates, loaded on tarpaulin-covered trucks, and transported to Gara Yana, from whence it is forwarded to the USSR either by train or via Burgas, where it is loaded on ships. Second- and third-quality ore, after being washed at the washing plant located near Bukhovo, is again sorted into four grades, namely, first quality, second quality, third quality, and a so-called "extra" quality. First, second and "extra" quality ore is exported to the USSR in the manner described above, while third-quality ore is processed at the Bulgarian uranium plant, which began operations recently.

On orders from the Soviet Union, Bulgaria ships only part of the ore to Czechoslovakia, via Rumania; from Czechoslovakia this ore is then shipped to the USSR, after undergoing a certain degree of processing.

To satisfy its transportation needs, the Bukhovo mining complex has 300 Zis-50 trucks of 5 tons capacity, 200 Zim-52 trucks of 8 tons capacity, and a number of heavy trucks whose capacity ranges from 8 to 15 tons.

The workers of the mining complex work in three shifts; the first (0800 to 1600 hours) and the second (1600 to 2400) engaged in production, while the third (2400 to 0600) engages in mine expansion activities and preparatory work, but when production has to be increased to fulfill production plans, the third shift likewise is assigned to production, in which case it works 8 instead of 6 hours. The third shift consists of fewer workers, who have the task of propping vaults and eliminating stagnant waters. The third shift at each mine uses up to 5 tons of cement [daily?] for reinforcement work.

Productive Capacity

The most productive mine in the entire Bukhovo complex is the Seslavski Monastir mine, which produces 460 tons per day. The complex as a whole produces an average of 2,000 tons per 24-hour period. During the year, production of the complex reaches peaks of 3,000 tons per 24-hour period, as well as lows of less than 1,500 tons (a few days per quarter, owing to the replacement of part of the workers). However, the actual daily production of uranium concentrate is estimated at about 550 tons since, of the ore extracted, about 60 percent is discarted in the sorting places and another 10 percent is discarded in the washing and sorting operations at the Bukhovo plant. Every day, including holidays, a train of 30 to 35 cars laden with uranium concentrate leaves for the USSR.

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Construction of an underground uranium plant was completed in 1956. Its location is kept strictly secret, but it is known that is located near Kremirovchi, in the direction of the "Saint George" convent. Workers who participated in its construction stated that it is 150 meters below ground level, in compact terrain, that it consists of three stories, and that it is connected by one tunnel with the "Gorten" mine, by another tunnel with the Bukhovo uranium processing plant, and by a third one with Gara Yana, where production waste is transported. Decauville tracks of 52-centimeter gauge are laid out in the tunnels; over them run mine cars drawn by electric units. The plant has an area of 15,000 square meters for production and personnel. The central premises are 200 meters long, 15 meters wide, and 10 meters high. The underground premises are reinforced concrete, and bricks. The smaller premises have been reinforced by fir, singed to protect it against mold and rot. The plant receives its electric supply from the "Kurilo" thermal-electric power plant and its water supply from the summit of Margush Mountain in Stara Planina. The machinery was supplied by the USSR and installed by engineer Razmyachev, author of the construction plans. The plant was built with Soviet capital.

The technalogical aspects of the production process and the productive capacity are considered to be state secrets and are known only to the plant management. A few workers have already received court sentences merely because they discussed insignificant matters relating to life at the plant, while others, charged with "having attempted to violate state secrecy," have received prison terms of 5 to 10 years. In the information released on the Bulgarian uranium industry predominates the thesis that production is in the "experimental" phase, that few workers work there, and that the uranium produced is shipped to Czechoslovakia for "scientific purposes for the Warsaw Pact," in amounts up to 3 to 5 kilograms.

The plant will begin to produce at full capacity at the end of 1958; at present the plant is only partly completed.

In addition, the people of Sofia know of the existence of a plan for the construction of an "atomic plant for the production of electric power," whose foundations were laid in the vicinity of Svetovrachene, near Sofia; the "atomic plant" is to be set up underground. Work was started 2,500 meters northwest of the abovementioned locality and is to be completed by the end of 1960.

The underground uranium plant, located near Kremirovchi, employs about 400 ordinary workers and 200 "specialists." The workers who engaged in production wear special clothing (red) and live in houses built especially for them, 1,300 meters above sea level. They have little or no contact with the other workers because they are afraid "of inadvertently revealing state secrets." Workers engaged in uranium production receive 600 to 1,200 leva per month, in addition to the privileges which they enjoy. Soviet specialists apparently receive between 3,000 and 5,000 leva per month.

About 500 meters east of the underground uranium plant there is an auxiliary underground warehouse where both by-products and uranium are stored. Said warehouse has a capacity of 1,080 cubic meters; the administrative offices of the "Bukhovo" mines and of the underground uranium plant are located nearby. The offices have all the modern comforts, such as hot and cold water, baths, and rest rooms. The offices are connected by telephone to all the uranium mines and to the Ministry of Heavy Industry. All underground installations are lighted with fluorescent lights. A few hundred blowers, driven by electric motors of 4 to 50 horsepower, provide ventilation.

Not far from the abovementioned warehouse there is an underground garage with an adjacent repair shop. This garage, capable of holding as many as 500 trucks, is not currently in use. It has gasoline storage tanks with a capacity of 500 tons. The garage's entrance is located 350 meters east of the "Saint George" convent in Kremirovchi. Motor vehicle tires and spare parts are stored above the convent.

Administrative Cadres and Workers Community of the "Bukhovo" Uranium Complex

Ore extraction and uranium production are under the supervision of 250 Bulgarian and Soviet geologists, mining engineers, and technicians. An additional 120 specialists work in branch offices. The production process is under the direct supervision of 260 civilians and army labor officers and noncommissioned officers, while processing operations are directed by 500 civilians and army labor officers and noncommissioned officers. The majority of the civilian workers consists of peasants from the Sofia area, mostly those whose land was confiscated because it was located in the mining and uranium processing area, but there are also workers who came from other Bulgarian regions. The latter were attracted by the idea of making money in a short time. A number of workers is replaced every 3 months; from every work shift are selected those who wish to have permanent status.

The mine workers are divided into two categories: ordinary and privileged. Workers in this latter category enjoy various priviliges, owing to the fact that they are party members and are given positions of trust in the production process. For them there are no production quotas or bonus tables, as is the case for the other miners. When they are not working as crew foremen, they work "in agreement," since management places

army workers at their disposal. Thus, workers in this category, who are considered as "master" miners, are able to earn large monthly bonuses ranging from 2,000 to 4,000 leva. Army workers receive no bonuses if they merely fulfill their norms; they receive bonuses only if they overfulfill them. Since emulation prevails at the mines, the workers always work to the limit of their endurance and most of them succeed in overfulfilling their assigned production quotas. Army workers generally earn 100 to 200 leva for production in excess of their norms.

Although much has been done to improve working conditions, they are still very difficult. Although special equipment is recommended for the protection of the mine workers against radioactivity, Bulgarian workers engaged in uranium production are not always provided with even miners' costumes. In some mines there is water leakage and the workers often must go into water puddles barefooted, since the warehouses of the "Bukhovo" mining complex have only about 400 pair of rubber boots. The mines are very inadequately lighted. There are few lamps, which are used only in the most important areas. Some miners are equipped with acetylene lamps, most of which are defective. The management of the complex was asked by the Communist Party to reduce production costs by economizing on the workers, it is forbidden to draw more than 50 grams of carbide from the warehouse for each work shift. This amount is not sufficient to keep a lamp lighted for 8 hours.

Accidents occur often in the mines, since inadequate attention is given to work safety. All of the management's attention is always devoted to the increase of production. During the period from the beginning of 1957 to September 1957 alone, 8 army and 3 civilian workers lost their lives; dozens of others incurred disabilities. Accidents most often occur when a part of the workers is replaced, since most of the newcomers are young and going into a mine for the first time, without any idea of the work to be done.

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Cases of illness are also frequent; the workers contract pleurisy, pulmonar diseases, and rheumatism. Those who contract serious diseases are hospitalized and, upon their return to the mines, are assigned to surface work.

The "Bukhovo" mining complex fulfilled its 1957 production plan by 9 September, Communist holiday. An output of one million tons of ore is planned for 1958.